Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, LNICST 2018 vol.222, pages 195-204

Interactive (Intelligent) Integrated System for the Road Vehicles' Diagnostics

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© ICST Institute for Computer Sciences, Social Informatics and Telecommunications Engineering 2018. Existing organization schemes of the vehicles' diagnostics are considered in the article and interactive complex vehicle diagnostic system is proposed on the basis of this analysis. The diagnostic algorithm is presented. To implement it, the intelligent diagnostic system based on monitoring the residual life of the vehicle's units and assemblies is developed. It consists of Server of diagnostics, Autonomous information-diagnostic blocks and Display and control unit. Currently, module for collection and processing information is developed. Operational tests of the vehicles when the sensors were installed were carried out together with manufacturer "KAMAZ".

http://dx.doi.org/10.1007/978-3-319-93710-6_21

Keywords

Branded service autocenter, Diagnostics, Interactive complex vehicle diagnostic system, Sensors

References

[1] Makarova, I., Pashkevich, A., Shubenkova, K.: Ensuring Sustainability of Public Transport System through Rational Management. Procedia Eng. 178, 137–146 (2017)

[2] Makarova, I., Khabibullin, R., Pashkevich, A., Shubenkova, K.: Modeling as a method to improve road safety during mass events. Transp. Res. Procedia 20, 430–435 (2017)

[3] Makarova, I., Khabibullin, R., Belyaev, E., et al.: Increase of city transport system management efficiency with application of modeling methods and data intellectual analysis. Stud. Syst. Decis. Control 32, 37–80 (2016)

[4] Prenninger, J.: Advanced Diagnostics and Predictive Analytics of Vehicle Data. http://www.iecon2013.org/files/IECON2013_IF4_01_Prenninger.pdf

[5] Hosein, M.P., Yankovich, S., Romero, S., Lam, S., Higgins, K.R.: Interactive augmented reality function. Patent US 9460568 B2 (2016)

[6] Kupčuljaková, J.: Possibilities of ensuring urban public transport priority. Arch. Transp. Syst. Telematics 5(4), 12–16 (2012)

[7] Borghesani, L.I.: Systems and methods for monitoring vehicle health with connected applications. Patent US 9541419 B2 (2012)

[8] Makarova, I., Khabibullin, R., Belyaev, E., Belyaev, A.: Improving the system of warranty service of trucks in foreign markets. Transp. Prob. 10(1), 63–78 (2015)

[9] Jindal, Y., Jain, S., Aggarwal, R., Verma, N.: Approach towards vehicle failure diagnosis-an expert system. Int. J. Comput. Appl. 1(23), 63–65 (2010). ISSN: 0975-8887

[10] Milanović, D.D., Misita, M., Tadić, D., Milanović, D.L.: The design of hybrid system for servicing process support in small businesses. FME Trans. 38, 143–149 (2010)

[11] Mostafa, S.A., Ahmad, M.S., Mohammed, M.A., Obaid, O.I.: Implementing an expert diagnostic assistance system for vehicle failure and malfunction. IJCSI Int. J. Comput. Sci. Issues 9(2), 1–7 (2012)

[12] Youjun, Y., Xiang, L., Zongqiang, W.: Design and realization of multi-function car-carry fault diagnosis system. In: Proceedings 2011 International Conference on Transportation, Mechanical, and Electrical Engineering (TMEE), pp. 1949–1952. IEEE Press, Changchun (2011)

[13] Teamcenter. https://www.plm.automation.siemens.com/en/products/teamcenter/index.shtml

[14] ODXStudio 4.1. https://vector.com/vi_odxstudio_en.html

[15] SmartMX for programmable, high-security, multi-application smart cards. https://www.nxp.com/docs/en/brochure/75017515.pdf